ZESCO INDIA

CATALOGUE

EDUCATIONAL TRAINING EQUIPMENT

ZODIAC

Electronic & Scientific Corporation

FACTORY : # 393, HSIIDC, SECTOR- 2, SAHA, DISTT. AMBALA

(Founder)
Late A. D. Batra

When someone asks us when was the foundation of the company, We answer Today! Retrospecting each and every day We spent with the mind that the company was founded tody! We find that 20 years have passed so quickly. There were hard times when the value of our products was not acknowledge but then there were fruitful days when exports increased. Since our company was founded today, We are not frustrated by failures, but modest at our achievements. On the basis of this ZODIAC starts today with a new leap to the future.

Carefully watch our creation for human being and our best efforts and principles for the development of products.

And always remember the name ZODIAC.

AJIT BATRA

LABEXPO 2009

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Swami Vivekananda, (1863-1902)

We believe that every being is divine, is God. Every soul is a sun covered over with clouds of ignorance; the difference between soul and soul is owing to the difference in density of these layers of clouds.

“Take up one idea. Make that one idea your life - think of it, dream of it, live on that idea. Let the brain, muscles, nerves, every part of your body, be full of that idea, and just leave every other idea alone. This is the way to success, that is way great spiritual giants are produced.”

“We are responsible for what we are, and whatever we wish ourselves to be, we have the power to make ourselves. If what we are now has been the result of our own past actions, it certainly follows that whatever we wish to be in future can be produced by our present actions; so we have to know how to act.”

“Never think there is anything impossible for the soul. It is the greatest heresy to think so. If there is sin, this is the only sin ? to say that you are weak, or others are weak.”

“You have to grow from the inside out. None can teach you, none can make you spiritual.
There is no other teacher but your own soul.”

“We are what our thoughts have made us; so take care about what you think. Words are secondary.
Thoughts live; they travel far.”

There are three ingredients in the good life: learning, earning and yearning."
- Christopher Morley

“Success is simple. Do what's right, the right way, at the right time.”
Arnold H. Glasgow

"Success is a journey, not a destination."
Ben Sweetland

“Success is not the key to happiness. Happiness is the key to success. If you love what you are doing,
you will be successful.”
Herman Cain quotes

"Success is not permanent. The same is also true of failure.”
Dell Crossword

When you know what you want,and you want it badly enough,you'll find a way to get it .
Jim Rohn

"Meet success like a gentleman and disaster like a man."
Frederick Edwin Smith, Lord Birkenhead

GENERAL INSTRUMENTS

SECTION A

ZES- 1 E/M BY THOMPSON METHOD (BAR MAGNET METHOD)

The apparatus is designed to work on 230volts AC 50c/s. It has built in E.H.T. supply. New Cathode Ray tube is used to provide proper display. Very easy to handle and Compact in size.

Specification

Input	:	230Volts 50C/s
E.H.T.	:	800Volts at 10mA
Deflection Volts	:	0-50volts at 15mA
L.T.	:	6.3volts at 2A
Horizontal Deflection	:	By Bar Magnets
Vertical Deflection	:	By internal built in supply

Provided with wooden stand, Deflection Magnetometer & pair of bar magnet.

ZES- 1

ZES-2 E/M BY MAGNETRON VALVE METHOD

Magnetron Power Supply

Input	:	230volts AC
H.T.	:	250volts at 200 Micro Amps
L.T.	:	6.3volts at 2A

Provided with meters to read voltage and current.

Power Supply For Solenoid

Input	:	230 volts AC
Output	:	30 volts DC at 3A

Meter is provided to read Current.

Accessories

Solenoid	:	Current Carrying Capacity 3A
Length	:	45cm
Dia	:	6.5cm
Rheostat	:	Groove type special wound Rheostat is provided at 3A.

ZES- 2

ZES-3 E/M BY HELLICAL METHOD (LONG SOLENOID)

Specification

Input	:	230 volts AC 50c/s
E.H.T.	:	1000 volts
DC Output for Solenoid Provided	:	60 volts DC at 1.5 Amps
Solenoid	:	Dia 4"-5"
Length	:	20" wound on properly insulated former and fitted on nicely Polished teak wood base.

ZES- 3

ZES-4 ULTRASONIC DIFFRACTION APPARATUS

The instrument is designed to give accurate and best result, keeping in view the various difficulties faced by the students. A high Power R.F. Oscillator is designed for this experiment and special type of high Resolving Spectrometer with Micrometer Eye-piece is provided for this experiment. It is fully tested & more fringes are formed with the help of R.F. Oscillator. Direct measurement can be made on the micrometer eye-piece and no camera is required.

High Power R.F. Oscillator

Specification

Input	:	230 volts AC 50c/s
Frequency	:	2.5-6.5Mc/s calibrated for different set of crystal Freq. & is Continuously variable

ZES- 4

ZES- 4

R.F. Output : The output is brought out on the terminals. Built in a nicely Polished box with on/off switch jewel light etc.

Accessories

Sodium Lamp & TXFR : Complete with 35 Watt TXFR & wooden case.

Ceramic Crystal : The Crystal is provided with the handle.

Tank : Optically true glass tank is provided for keeping the Liquid.

Liquid : Kerosene Oil is provided in a plastic bottle

(a) ...do… with out TXFR & Sodium Lamp.
(b) Extra Crystal of different frequencies.
(c) Sodium Lamp in wooden cabinet with 55Watt. Transformer.

ZES-5 **RESISTIVITY OF SEMICONDUCTOR BY FOUR PROBE METHOD AT DIFFERENT TEMPERATURE & DETERMINATION OF BAND GAP COMPLETE IN ALL RESPECT.**

ZES- 5

ZES-6 **HALL EFFECT EXPERIMENT**

(a) Electromagnet 0-7.5KGauss
(b) Power Supply
(c) Digital Gauss Meter with Probe
(d) Hall Set Up
(e) Hall Probe GE Xtal

ZES-7 **ELECTRON SPIN RESONANCE SPECTROMETER**

Complete in all respect without C.R.O.

ZES-8 **APPARATUS FOR THE MEASUREMENT** of Susceptibility of Para Magnetic Solution by Quink's Tube Method. Complete with Electro Magnet & Power Supply, Quinks tube with stand & digital gauss meter with probe.

ZES-9 **MAGNETIC HYSTERESIS LOOP TRACER complete in all respect but** without C.R.O.

ZES- 6

ZES-10 **RADIATION COUNTING SYSTEM (GM COUNTER)**

Instrument consists of Power supply for G. M. Tube with Digital readout meter 6 digit counting system with its power supply controls for reset, start and stop through on panel. One presetable timer with 3 digit display and thumb wheel switch.

Complete with G.M. Tube, stand and one radio active source B. Digital voltmeter for read the G. M. Tube voltage.

ZES-11 **DIGITAL GAUSS METER**

ZES- 10

Specification

Range : 0-2KG & 0-20KG

Resolution : 1G at 0-2KG range

Accuracy : ± 0.5%

Temperature : Upto 50^0C

Display : 3½ digit,7 segment LED DPM with auto polarity & overflow Indication.

Power : 220V ±10%, 50Hz

Transducer : Hall Probe - InAs

MEASURING INSTRUMENTS
SECTION B

ZES-20 V.T.V.M (VACUUM TUBE VOLTMETER VM-10)

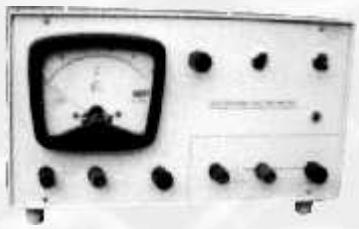
Specification

AC Voltage	:	0-1.5,5, 15,50,150,500,1500volts
DC Voltage	:	0-1.5,5,15,50,150,500,1500volts
Resistance	:	0-1k, 10k, 100k, 1M, 10M, 100M, 1000 meg. ohms.
Calibration Accuracy	:	AC Voltage ±4% on all ranges. DC Voltage ± 3% on all ranges. Resistance within ±2% on all ranges.
Frequency Response	:	Within range of 50c/s to 5Mc/s flat.
Input Impedance	:	DC Voltage 11M ohms on all ranges for AC voltages 5M Ohms in Parallel with 25P.F.
Meter	:	Using 80mm Diameter
Source of Supply	:	230volts 50c/s AC.

ZES- 20

ZES-22 DISTORTION FACTOR METER

Instrument is measure unwanted distorted signal in an amplifier, by feeding pure sine wave and amplified signal passing through filters and distorted signal measured on meter in terms of percentage. The instrument consists of sine wave generator filter circuit and meter. Workable 220 V 50 Hz. The Capability of this instrument is to measure distortion in audio range 20 Hz to 20 Khz.



ZES- 22

ZES-23 Q METER

The Instrument is to measure Q (Quality factor) of an inductor. which is necessary to know when designing coils or transformer, measuring frequency is 1 KHZ or 10 KHZ. Measuring range is 0.1 to 100. Moving coil meter is used as indicator. Workable 220 V 50 Hz. Balancing dial is directly calibrated in terms of Q Dimension : 14"x9"x5$^{1}/_{2}$"

ZES-24 POWER OUTPUT METER

Input	:	230volts AC 50Hz
Range	:	0-.5watts, 0-5watts, 0-50watts.
Load Resistance	:	4,8 and 15 ohms

OSCILLATOR / FUNCTION GENERATOR
SECTION C

ZES-35 AUDIO SIGNAL GENERATOR

Frequency Range	:	1Hz to 1MHz in six Decade Step
Output Voltage	:	Sine Wave 0-10v in three steps with Continuous Variable
Square Wave	:	0-15p/p Continuously variable.
Distortion	:	Sine Wave less than 0.5% between 100 Hz to 100 KHz
Output Impedance	:	600 Ohms.

ZES-36 WIDE RANGE AUDIO OSCILLATOR

Frequency Range	:	10 Hz to 500 KHz in 5 Decade Step
Output Voltage	:	Sine wave 0-10V in 5 step with Continuous variable Control.
Square Wave	:	0-15p/p Continuously variable.
Distortion	:	Less than 0.5%

ZES- 38

ZES-37 LOW DISTORTION AUDIO OSCILLATOR

Frequency Range	:	10 Hz to 110 KHz in four ranges by step selection with Accuracy ± 3%
Output Voltage	:	Sine wave 0-10V in 5 decade step with continuous Variable control.
Distortion	:	Less than 0.2%

ZES- 38 AUDIO SIGNAL GENERATOR

Frequency Range	:	20 Hz to 200 KHz in 4 Decade step.
Output Voltage	:	Sine wave 0-10v in two decade step with Continuous Variable control.
Square Wave	:	0-15p/p Continuously variable.
Distortion	:	Less than 0.5% between 100Hz to 100KHz

ZES- 39 FUNCTION GENERATOR

Wave Forms	:	Sine, Square, Triangle
Frequency Range	:	0.1Hz to 1MHz in 6 Decade step
Output Voltage	:	0-20V p/p continuously variable
Output Impedance	:	600 Ohms.

ZES- 40

ZES- 40 FUNCTION GENERATOR

Wave Forms	:	Sine, Square, Triangle
Frequency Range	:	1Hz to 100KHz in 5Decade Step
Output Voltage	:	0-6V

ZES- 41 VHF OSCILLATOR

For Leacher Wire Experiment Supplied with power supply & Leacher Wire fitted on board. (Approx. 160cm) and Detector (Bulb Type) Or R.F. Meter

ZES- 42 HIGH POWER R.F. OSCILLATOR

Frequency	:	2.5 MHz to 6.5 MHz Continuously variable useful for Ultrasonic Experiment (Crystal Calibrated)

ZES- 42

ZES- 43 A F Oscillator(F. Generator) Digital

Frequency Range	:	0.1 Hz to 1 MHz in 7 decadic ranges.
Display	:	7 Segment Digital 4 digit Display
Gate Time	:	10 sec, 1 sec, 0.1 sec. (internally setted)
Function	:	Since, Square, Trianble & TTL pulse output. Ramp and Pulse with the help of duty cycle/ symme try control.
Output Amplitude	:	20 V p/p in to open circuit. Coarse (step) and fine control
Attenuator	:	0 to 60 dB variable (2x20 dB step soarse attenuator and 20 dB fine control)

Output Impedance	:	50 ohms & 600 ohms switch selectable
D.C. Offset	:	variable upto ± 10 V into open circuit.
Duty Cycle (ramp & pulse):		Continuously variable for continuous working
Amplitude Flatness	:	± 3% of 10 Khz ref. across the operating freq. band at max. amplitude and 50 ohms load.

Wave form Charc.

Sine	:	Distortion : <1 % upto 100 Khz.
	:	Response : ± 3 dB upto 1 Mhz
Square	:	< 100 n. sec. rise and fall time at 50 ohms termination.
Triangle	:	Linearity > 99% up to 100 Khz
TTL Pulse		TTL compatible, Rise time less than 75 nsec H ≥ 2.4 V, L≤0.4 V
Ramp/Pulse Duty Cycle	:	Variable by symmetry control (20:80) up to 200 Khz
FM IN	:	Available via external input.
Power	:	230 V ± 10%, 50 Hz
Accessories	:	BNC cables, Power cords, instruction manual.

Specifications

Frequency	:	1000 c/s fixed
Accuracy	:	± 1%
Wave Form	:	Sine Wave
Output Volts	:	0-20 V
Input	:	230 volts AC 50 Hz

ZES-44 SINE WAVE OSCILLATOR

1 Kc/s Solid State Oscillator

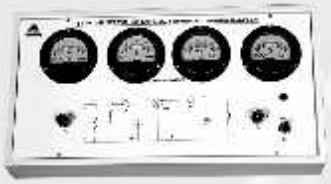
Input	:	230 volts
Frequency	:	1 Kc/s fixed
Output	:	0-8 volts

TRANSISTOR CHARACTERISTIC CURVE APPARATUS

SECTION D

ZES-55 P.N.P. COMMON EMITTER TRANSISTOR CH. CURVE APPARATUS

The instrument is designed to draw input as well as output characteristic curve of a P.N.P. Transistor. It has two regulated power supplies of its own & four meters. Complete circuit diagram is provided on the front panel. Complete with instruction manual.



ZES- 55

Specifications

Input	:	230 volt AC
Output	:	0-9 volts at 50 mA
Stability	:	± .05%

(a) COMMON EMITTER
(b) COMMON BASE
(c) COMMON COLLECTOR

ZES- 55D P.N.P. COMMON EMITTER TRANSISTOR CH. CURVE APPARATUS (with Digital Meter)

ZES- 55D

ZES-56 PNP & NPN TRANSISTOR CHARACTERISTIC APPARATUS

The instrument is designed to draw input as well as output characteristic curve of a P.N.P. Transistor AC 128. It has two regulated power supplies of its own & four meters. Complete circuit diagram is provided on the front panel. Complete with instruction manual.

Specifications

Input	:	230 volt AC
Output	:	0-9 volts at 50 mA
Stability	:	± .05%

ZES- 56

ZES-56A TRANSISTOR CHARACTERISTIC APPARATUS CB/ CE/ CC

ZES-57 FET TRANSISTOR CHARACTERISTIC APPARATUS

The instrument is designed to draw the characteristic of a F.E.T. Transistor its drain current VS drain source voltage and VGS. Complete with circuit diagram.

ZES-58 MOSFET CHARACTERISTIC APPARATUS

The instrument is designed to draw the characteristic of a MOSFET. Complete circuit diagram is engraved on the front panel. Three meters are provided with power supply of its own.

ZES- 56 A

ZES-59 CHARACTERISTIC OF SCR

Complete with three meters to read anode current, anode voltage and gate current. Two built in power supplies are provided.

ZES-60 CHARACTERISTIC OF DIAC

The instrument is designed to draw the characteristic of a diac. It is provided with 0-30 volts IC regulated Power supply & 2 meters.

ZES- 61

ZES-61 CHARACTERISTIC OF TRIAC

The instrument is designed to draw the characteristic of a triac. It is provided with 0-300volts ad 0-20 volts power supplies IC regulated. Provided with three meters.

ZES-62 UJT CHARACTERISTIC CURVE APPARATUS

The instrument is designed to draw the characteristic curve of UJT. It has two power supplies of its own and four meters to draw input characteristic, complete circuit diagram is provided on the front panel.

ZES- 63 A

ZES-63 ZENER DIODE CHARACTERISTIC APPARATUS

(a) The instrument is designed to draw the characteristic curve of a Zener Diode Forward Bias as well as Reverse Bias. Provided with two power supplies and four meters.
(b) ..do.. with two meters.
(c) ..do.. with 4 digital meters

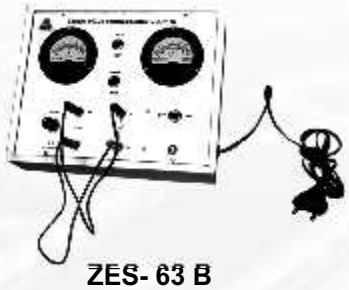
ZES-64 ZENER DIODE AS A VOLTAGE REGULATOR

Complete circuit diagram is engraved on the front panel. Complete with power supply & meter.

ZES-65 PN JUNCTION DIODE CHARACTERISTIC APPARATUS

Specification

(a) H.T. 1 0-30 volts at 50 µA
H.T. 2 0-3 volts at 10 mA
Provided with two round meters of dual ranges.
(b) ..do.. with 4 meters
(c) ..do.. with 4 digital meters



ZES- 63 B

ZES-66 ZENER DIODE ON BOARD

ZES-67 PN JUNCTION DIODE ON BOARD

ZES-68 PNP TRANSISTOR ON BOARD

ZES-69 NPN TRANSISTOR ON BOARD

ZES-70 FET TRANSISTOR ON BOARD

ZES-71 UJT ON BOARD

ZES- 74

ZES-72 THERMISTER ON BOARD

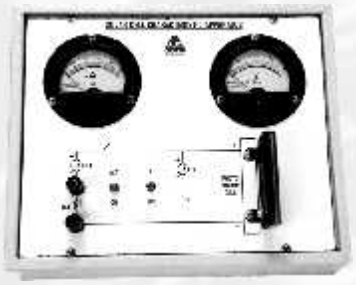
ZES-73 THERMISTER CHARACTERISTIC APPARATUS

Complete circuit diagram in engraved on the front panel with power supply and two meter.

ZES-74 ENERGY BAND GAP OF PN JUNCTION DIODE

Complete circuit diagram is engraved on the front panel, provided with power supply, 2 meter, thermometer & oven.

ZES-75 VERIFICATION OF CHILD'S LAW APPARATUS



ZES- 78

ZES-76 PHOTO DIODE CHARACTERISTIC APPARATUS

The instrument is designed to draw the current versus intensity of light at different value of voltage. It has built in power supply with two meters.

ZES-77 PHOTO TRANSISTOR CHARACTERISTIC APPARATUS

The instrument is designed to draw the current versus intensity of light at different value of voltage. It has built in power supply with two meters.

ZES-78 SOLAR CELL CHARACTERISTIC APPARATUS

The instrument is designed to draw the graph between current & voltage, between resistance & voltage.

ZES-79 VERIFICATION OF STEFAN'S LAW APPARATUS

The Complete circuit diagram is engraved in the front panel with power supply, two meters & bulb 19 V.

ZES- 79

ZES-80 CHOKE CHARACTERISTIC APPARATUS

ZES-81 HIGH RESISTANCE BY SUBSTITUTION METHOD

CHARACTERISTIC CURVE APPARATUS
SECTION E

ZES-90 PENTODE CHARACTERISTIC APPARATUS

The instrument is designed to draw the characteristic of the Pentode valve. It has two built in power supplies. Four 65mm, dia meters are provided to read different Electrode volt/current. The Pentode valve is fitted on panel.

Input	:	230volts AC
H.T. 1(Stabilized)	:	0-300volts at 30mA
H.T.2	:	0-250volts at 25mA
Bias	:	0-10 volts at 100mA
L.T.	:	6.3 volts at 2Amps.

Built in a nicely polished box with on/off switch, jewel light etc.

(b) **….Do.. (Tetrode Characteristic Apparatus)**

ZES- 90

ZES-91 PENTODE/TETRODE VALVE ON BOARD

ZES-92 TRIODE CHARACTERISTIC APPARATUS

The instruments is designed to work on 30 volts AC it consists of Power Supply of its own, fitted with a Triode Valve. Three meters are provided to read the Anode Voltage/Current & Bias.

Specification

Stabilized Power Supply.

Input	:	230 volts AC 50 c/s
H.T.	:	0-300 volts at 30Milli Amps
Bias	:	10-0-10 volts at 50 Milli Amps
L.T.	:	6.3 volts at 2 amps

The instrument is built in a steel box nicely polished.

(b) **…Do… with Two meters.**

ZES- 94

ZES-93 TRIODE ON BOARD

ZES-94 DIODE CHARACTERISTIC APPARATUS

The instrument is designed to work on 230 volts AC. It consists of Regulated Power Supply of its own, fitted with a Diode Valve on the front panel. The anode voltage can be varied from 0-250 volts at 25 Milli Amps. Two meters are provided to read the Anode Voltage a anode current. This apparatus is very useful for plotting the characteristic curve of a Diode valve. The instrument is built in a steel box nicely polished.

Specification

Stabilized Power Supply

Input	:	230 volts AC 50 c/s
Output	:	0-250 volts at 25 Milli Amps
L.T.	:	6.3 volts AC at 500 mA variable (Continuously variable)

ZES-95 DIODE ON BOARD

ZES-96 PHOTO CELL CHARACTERISTIC APPARATUS

Specifications

A variable DC power supply is fitted with two meters to read DC voltage applied to the Photo tube, and second meter is provided to read the current.

ZES-97 PLANCK'S CONSTANT APPARATUS With Analog Meter

To determine Plank's Constant using LED's of known wave length. Power supply is built in provided with Milli ammeter and Voltmeter to read the current and voltage.

(b) …do…… **With Digital Meter**

ZES- 97

ZES-98 THYRATRON CHARACTERISTIC APPARATUS

To study the ionization potential of thyratron valve 2D21 with 2 meters, with built in power supply of its own.

ZES- 98

ZES-99 MILIKAN'S OIL DROP APPARATUS Complete with Power Supply.

(b) — do — power supply for above.

ZES- 99

ZES-100 WORK FUNCTION OF A DIODE VALVE

Complete with 3 Meters, Power Supply & Diode Valve.

ZES-101 TO VERIFY INVERSE SQUARE LAW USING PHOTO VOLTIC CELL

OSCILLOSCOPES
SECTION F

ZES- 116

ZES-115 SINGLE CHANNEL OSCILLOSCOPE 10MHz Using 70 mm CRT

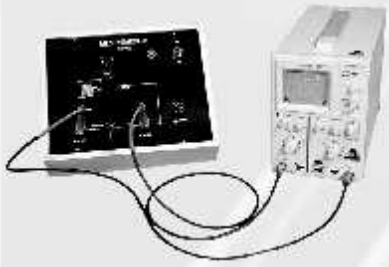
ZES-116 DUAL TRACE OSCILLOSCOPE 20MHz

ZES-117 B.H. CURVE APPARATUS

Complete circuit diagram is engraved on the front panel. Terminals are provide for X & Y plates.

ZES-118 DEMONSTRATION OSCILLOSCOPE

Complete circuit diagram is engraved on the panel. The student can be explained the working of all the stages. From EHT on wards. The CRT is fitted in a separate wooden box with Perspex scale. Very useful for daily working also.

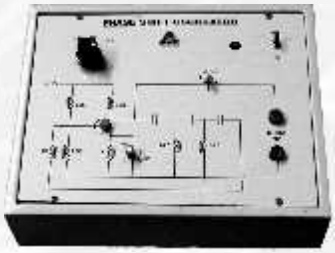


ZES- 117

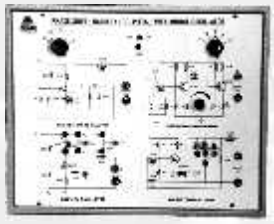
ELECTRONIC TRAINING BOARD
SECTION G

Complete circuit diagram is engraved on the front panel. Provided with power supply of its own. Fitted in a powder coated box with terminals for output.

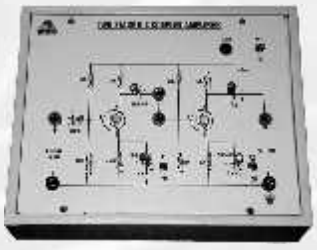
ZES- 146



ZES- 149



ZES- 149C



ZES- 161B

ZES- 165

ZES-146 **HARTLEY OSCILLATOR** Using Transistor

ZES-147 **COLPITT OSCILLATOR** Using Transistor

ZES-148 **WIEN BRIDGE OSCILLATOR** Using Transistor

ZES-149 **PHASE SHIFT OSCILLATOR** Using Transistor

(b) …do… Using IC 741

ZES-149C **HARTLEY/ PHASE SHIFT/ COLPITT/ WEIN BRIDGE OSCILLATOR**

ZES-150 **FREE RUNING MULTI VIBRATOR (ASTABLE)** Using Transistor

(b) …do… Using IC 555

ZES-151 **MONOSTABALE MULTI VIBRATOR** Using Transistor

(b) …do… Using IC 555

ZES-152 **BI-STABLE MULTI VIBRATOR** Using Transistor

(b) …do… Using IC 555

ZES-153 **IC 555 TRAINER WITH BUILT IN SINE/SQUARE WAVE OSCIL.**

100Hz/1KHz. Eight Expt. Can be performed Astable, Monostable, Bistable, Schmitt Triggers, Frequency Divider, Missing Pulse Detector, Square Wave Generator, Saw Tooth Generator.

ZES-154 **IC SCHMITT TRIGGERS**

ZES-155 **IC SAW-TOOTH GENERATORS**

ZES-156 **IC EMITTER FOLLOWER**

ZES-157 **IC REGULATED POWER SUPPLY**

AMPLIFIER

ZES-160 **TO STUDY COMMON BASE AMPLIFIER**

ZES-161 **(a) SINGLE STAGE R.C. COUPLED AMPLIFIER**
(b) TWO STAGE R.C. COUPLED AMPLIFIER

ZES-162 **TRANSISTOR AUDIO AMPLIFIER**

ZES-163 **TO STUDY COMMON EMITTER AMPLIFIER**

ZES-164 **TRANSFORMER COUPLED AMPLIFIER**

ZES-165 **TRANSISTOR PUSH PULL AMPLIFIER**

ZES-166 **COMPLEMENTARY SYMMETRY AMPLIFIER**

ZES-167 CLASS 'A' AMPLIFIER

ZES-168 CLASS 'B' AMPLIFIER

ZES-168A CLASS 'C' AMPLIFIER

ZES-169 CLASS 'AB' AMPLIFIER

ZES-170 STUDY OF TRANSISTOR BIASING TECHNIQUES SUCH AS, FIXED BIAS, COLLECTOR TO BASE BIAS, POTENTIAL DIVIDER SUPPLIES.

ZES-171 IC AUDIO AMPLIFIER

ZES-172 DEMONSTRATION SUPER HETERODYNE RADIO RECEIVER (SINGLE BAND).

ZES- 168 A

TRANSISTOR/IC REGULATED POWER SUPPLIES
SECTION H

ZES-186 DUAL CHANNEL POWER SUPPLIES

Output Voltage/ Current	With 4 r Analog Mete	With 4 Digital Meter
0- ±15 V/1A	A	E
0- ±15 V/2A	B	F
0- ±30 V/1A	C	G
0- ±30 V/2A	D	H

ZES- 186

ZES-187 IC REGULATED POWER SUPPLIES

Specification

Input	:	230 volts AC
Output	:	0-30 volts at 5Amps
Load Regulation	:	± .02%
Line Regulation	:	± .05%
Ripple	:	Less than 1mv r.m.s.
Protection	:	Protected against short circuit.
Meters	:	Two meters are provided to read volts and Amps.

(b) 4 Amp Current
(c) ..do.. 3 Amp Current
(d) ..do.. 2 Amp Current
(e) ..do.. 1A Current
(f) ..do.. 500 mA current

Or with two digital volt/Ammeter Rs. 700.00 Extra.

ZES- 187

ZES-188 FIXED OUTPUT DC, IC REGULATED POWER SUPPLIES

Specification

Load Regulation	:	Better than .05%
Line Regulation	:	Better than .01%
Ripple	:	Less than 1mV r.m.s.

(a) Output +5V	:	1 Amps	(b)	+9V	:	1 Amps
--do--	:	2 Amps		-do-	:	2 Amps
(c) + 12V	:	1 Amps	(d)	+15V	:	1 Amps
--do--	:	2 Amp		-do-	:	2 Amps

Note : Above Power Supplies are without meters.

ZES-189 DUAL POWER SUPPLIES (FIXED)

Specifications

Load Regulation	:	Better than .05%				
Line Regulation	:	Better than .01%				
Ripple	:	Less than 1mV r.m.s.				
(a) ± 5V	:	0.5Amps	(b)	± 9V	:	0.5Amps
-do-	:	1Amps		-do-	:	1Amps
-do-	:	2Amps		-do-	:	2Amps
(c) ± 12V	:	0.5Amps	(d)	± 15V	:	0.5Amps
-do-	:	1Amps		-do-	:	1Amps

Note : Above Power Supplies are without meters.

ZES-190 LOW VOLTAGE AC/DC POWER SUPPLIES

Input : 230AC +10% 50Hz
Output : 0-25AC, 0-20DC 10 Amps with 1 Deluxe meter to measure voltage.

ELECTRONICALLY REGULATED POWER SUPPLIES

ZES-200 ELECTRONICALLY REGULATED POWER SUPPLY

ZES-

Input : 230volts AC
Output : 0-300volts DC at 200 mA continuously variable.
Bias : 0-150 volts DC at 5 mA continuously variable.
L.T. : 6.3 volts at 3 Amps
Regulation : ±1%
Controls : Power on/off H.T. control, bias control output terminals and jewel Light are located on front panel. The unit is enclosed in a steel Cabinet Using two round meters.

ZES-201 REGULATED POWER SUPPLY

Input : 230volts AC 50c/s
Output H.T. : 0-300volts 100mA continuously variable and metered for H.T. volt and mA.
Bias : 0-30volts DC at 5mA continuously variable.
L.T. : 6.3volts at 3Amps
Regulation : ± 1%
Controls : Power on/off H.T. control, bias control output terminals and jewel Light are located on front panel. The unit is enclosed in a steel Cabinet Using two round meters.

ZES-202 REGULATED POWER SUPPLY

Input : 230volts AC 50c/s
Output H.T. : 0-300volts DC at 50mA
Bias : 0-30volts at 10mA
L.T. : 6.3volts at 3Amps.
Regulation : ±1%
Stabilization : Better than 1% for a variation of 10% AC mains supply.
Ripple Content : Approximately 10 Milli Volts.
Power Requirements : 230volts AC 50c/s

ZES-203 ELECTRICALLY REGULATED POWER SUPPLY

For Triode Experiment, with three round meters.

ZES-204 ELECTRICALLY REGULATED POWER SUPPLY

For Diode Experiment, with Two round meters.

ZES-205 ELECTROPHORESIS POWER SUPPLY

(a) — do – 300V/100mA with 2 Analog meter
(b) ---do— 300V/100mA with digital meter.
(c) ---do— 300V/50mA with 2 analog meter.
(d) ---do— 300V/50mA with digital meter.

ZES- 205.d

BATTERY ELIMINATORS
SECTION I

ZES-227 BATTERY ELIMINATORS

Battery Eliminators are having full wave bridge and Double wound Transformers, Using copper wire and high grade lamination to avoid losses. They are built in a nicely polished box, having lock type terminals on/off switch, jewel light etc.

(a) 2,4,6, volts DC at 500 m.A.
(b) -do- DC at 1Amp.
(c) -do- DC 2Amp
(d) -do- DC 3Amp

ZES-228

(a) 2, 4, 6, 8, 10, 12 volts at 500 milli amps
(b) -do- 1Amp
(c) -do- 2Amp
(d) -do- 3Amp
(e) -do- 4Amp
(f) -do- 5Amp
(g) -do- 6Amp

ZES- 228

ZES-229 IC REGULATED BATTERY ELIMINATORS

(a) 2-12V/ 500mA
(b) 2-12V/ 1Amp
(c) 2-12V/ 2Amp
(d) 2-12V/ 3Amp

BATTERY CHARGERS

ZES-240 BATTERY CHARGER

Battery Charger are designed to give constant output and are having double wound transformers and full wave rectifiers. Built in nicely polished box with on/off switch. Jewel light and fuse etc.

Input : 220V AC 50c/s
(a) 2,4,6volts DC at 1Amp
(b) 2,4,6volts DC at 2Amp

(c) 2,4,6volts DC at 3Amp
(d) 2-12V at 1Amp.
(e) 2-12V at 2Amp
(f) 2-12V at 3Amp
(g) 2-12V at 4Amp
(h) 2-12V at 6Amp

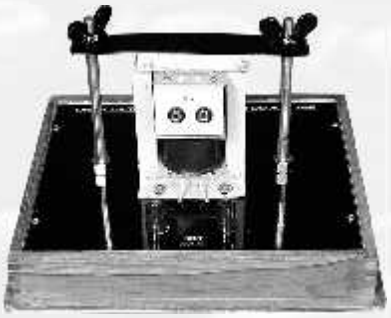
Note: Rs 150/- will be charged extra for meter.

ZES- 251

ZES-241 FULLY AUTOMATIC BATTERY CHARGER

The instrument is designed to give constant output and has solid-state circuit. Built in a nicely polished box with indicator, Meter etc.
Input : 230Volts AC
(a) Output : 12Volts DC at 3A
(b) 12Volts DC at 4A
(c) 12Volts DC at 6A

TRANSFORMERS



ZES- 252

ZES-251 STEP DOWN TRANSFORMER

Fitted on wooden board with input and output terminals, workable on 230volts AC with circuit diagram.
Output
(a) 2,4,6,12 volts AC at 1Amp
(b) ---do---- 2Amp
(c) ---do---- 3Amp
(d) --- do---- 4Amp

ZES-252 DEMONSTRATION TRANSFORMER

Fitted on wood board with terminals with three different coils.

a) 6 volts b) 12 volts c) 230 volts

ZES-253 TRANSFORMER FOR CALENDERS & BARNESS APPARATUS

6,12,18,24 volts at 4Amps fitted in a box

SODIUM VAPOUR LAMP TRANSFORMER

ZES- 265

ZES-265 SODIUM VAPOUR LAMP TRANSFORMER

Fitted in fine painted steel cabinet with on/off switch, jewel light and output socket. Specially designed to work on 220volts AC using copper wire.
(a) 35Watt (b) 55Watt

ZES-266 AUTOMATIC VOLTAGE STABILIZER

Fitted in well painted steel cabinet with voltmeter on/off switch, jewel light and output socket. Guaranteed for one years against manufacturing defects.

Input : 135 to 290volts AC
Output : 220volt ± 9% (200-240volts)
KVA (a) 0.5KVA (b) 1KVA
(c) 2KVA (d) 3KVA
(e) 4KVA (f) 5KVA

The above voltage stabilizers can be supplied with low voltage cut at 135V & high cut at 290 V. Times delay upto 2-3 minutes can be provided at extra cost.

ZES-267 VARIAC

Input : 230 volts
Output : 0-270 volts
Current : (a) 2 Amps (b) 4 Amps (c) 8 Amps

DECADE INDUCTANCE BOXES
SECTION J

Decade Inductance boxes are manufactured using Air Core Inductance Acc. ± 2.5%

ZES-277 FIXED INDUCTANCE BOXES

(a) 100Micro Henry to 1000 Micro Henry (Any Single Value)
(b) 1 Milli Henry to 10 Milli Henry (An Single Value)
(c) 10 Milli Henry to 100Milli Henry (Any Single Value)
(d) 100Milli Henry to 1 Henry (Any Single Value)

ZES-278 SINGLE DIAL

(a) 100 Micro Henry to 1000Micro Henry
(b) 1 Milli Henry to 10 Milli Henry
(c) 10 Milli Henry to 100 Milli Henry
(d) 100 Milli Henry to 1000 Milli Henry
(e) 1 Henry to 10 Henry

ZES-279 TWO DIALS

(a) 100 Micro Henry to 10 Milli Henry
(b) 1 Milli Henry to 100 Milli Henry
(c) 10 Milli Henry to 1000 Milli Henry
(d) 100 Milli Henry to 10 Henry.

ZES-280 THREE DIALS

(a) 100 Micro Henry to 100 Milli Henry
(b) 1Milli Henry to 1000 Milli Henry
(c) 10 Milli Henry to 10 Henry

ZES-281 FOUR DIALS

(a) 100 Micro Henry to 1 Henry
(b) 1 Milli Henry to 10Henry

Any Other value or decade can be supplied on request.

DECADE CONDENSER BOXES

Decade Condenser Boxes comprise of high grade paper condensers and the working voltage is 250 votls Acc : ± 1.5 %

ZES- 294

ZES-291 FIVE DIALS

Measuring Range
Five Decade as follow:

(a)	10x.0001	:	.001µF
(b)	10x. 001	:	.01µf
(c)	10x. 01	:	.1µF
(d)	10x .1	:	1µF
(e)	10x1	:	10µF
Internal Capacity		:	Approximately 50pF

ZES-292 FOUR DIALS

(a)	10x. 001	:	.01µF
(b)	10x .01	:	.1µF
(c)	10x.1	:	1µF
(d)	10x 1	:	10µF

ZES-293 THREE DIALS

(a) .0001, .001, .01 farad
(b) .001, .01 and .1 Micro farad
(c) .01, .1 and 1 Micro farad

ZES-294 TWO DIALS

(a) .0001 to .01 Micro farad
(b) .001 to .1 Micro farad
(c) .01 to 1 Micro farad

ZES-295 SINGLE DIAL

(a) .0001 to .01 Micro farad
(b) .001 to .1 Micro farad
(c) .01 to 1 Micro farad

ZES- 301

ZES-296 DECADE RESISTANCE BOX

DECADE RESISTANCE BOX

ZES-300 SINGLE DIAL

Any Range up to 10 Meg

ZES-301 TWO DIAL

(a) 10 ohm, 100 ohm
(b) 100 ohm, 1 K
(c) 1 K, 10 K
(d) 100 k, 1 Mega ohm

ZES-302 THREE DIAL

(a) 10 ohm, 100 ohm, 1 K
(b) 100 ohm, 1 K, 10 K
(c) 1 K, 10 K, 100K
(d) 10 k, 100K, 1 Mega ohm

ZES-303 **FOUR DIAL**
10 ohm x 100 ohm x 1 K x 10 K

ZES-304 **FIVE DIAL**
10 ohm x 100 ohm x 1 K x 10 K x 1 M

DIGITAL INDICATING INSTRUMENTS
SECTION K

ZES-310 **DIGITAL pH METER**

Measuring	:	0 to 14pH, with automatic polarity & decimal point.
Resolution	:	0.01 pH for pH measurement.
Accuracy	:	± 0.1% ± 2 digit
Temp. Compensation Range	:	0 to 80°C
Read Out	:	Digital bright, LED Type, 3½ digit 7 segment, 12.5mm Height
Electrode	:	Glass Combination Type
Power Requirements	:	230V± 10%, AC, 50Hz

ZES- 310

ZES-311 **DIGITAL ELECTRONIC STANDARD CELL**

Input	:	230 volts
Voltage Output	:	1.018 volts
Accaccuracy	:	.005% ± 1 digit
Display	:	3½ digit LED display

B) -DO- WITHOUT DISPLAY

ZES-312 **DIGITAL STOP WATCH**

- Start/Stop Operation by mini toggle switch
- Reset by a push button
- Range 9999.9 seconds
- Resolution 0.1Sec.
- Accuracy - ± .1sec. (Quartz controlled)
- Display-12.5mm. Bright seven segment display
- Operating Voltage-230V AC ± 10% 50Hz

ZES- 311 B

ZES-313 **DIGITAL MICRO VOLTMETER**

Specification

Range	:	1mV, 10mV, 100mV, 1V & 10V with 100% over ranging
Resolution	:	1µV
Accuracy	:	± 0.2% ± 1digit
Stability	:	Within ± 1 digits
Input Impedance	:	>1000MΩ (10MΩ on 10V Range)
Display	:	3½ digit, 7 Segment LED with auto-polarity and decimal Indication.
Power Supply	:	220V ± 10%, 50Hz

ZES- 314

ZES-314 DIGITAL NANOAMMETER

Specification

Range	:	100nA, 1µA, 10µA, 100µA with 100% over-ranging
Accuracy	:	±0.2% for all ranges
Resolution	:	0.1nA
Input Resistance	:	25Ω , 2.5Ω , 0.25Ω , 0.025Ω
Display	:	3½ digit, 7 Segment LED(12.5mm height)with auto polarity And decimal indication.
Input	:	Through amphenol connector
Power Supply	:	220V ± 10%, 50Hz

ZES- 315

ZES-315 DIGITAL PICOAMMETER

Specification

Multiplier	:	x1, x10, $x10^2$, $x10^3$, $x10^4$, $x10^5$
Accuracy	:	±0.2% for all ranges
Resolution	:	1pA, 10pA, 100pA, 1nA, 10nA, 100nA
Input Resistance	:	2.5KΩ , 0.25KΩ , 25Ω , 2.5Ω , 0.25Ω , 0.025Ω
Display	:	3½ digit, 7 segment LED (12.5mm height) with auto polarity decimal indication.
Input	:	Through amphenol connector
Power Supply	:	220V ± 10%, 50Hz.

ZES- 316

ZES-316 DIGITAL VOLTMETER DC

Any Range 0-1000 volts, Built in a nicely polished box.

ZES-317 DIGITAL AMMETER DC

Any Range from 0-5Amps built in a nicely polished box.

ZES-318 DIGITAL LINE FREQUENCY METER

4 digit LED range 30-70Hz Input 220V AC.

ZES-319 DIGITAL CONDUCTIVITY METER

Specification

Read Out	:	3½ digit LED
Conductance	:	0.01µ Mhos to 1000 m Mhos in 5 ranges.
Accuracy	:	±0.5% ± 1 digit
Resolution	:	0.01mho in lowest range
Operating Temp	:	10^0C to 50^0C.
Input Frequency	:	1000 Hz
Input	:	230V AC ± 10% 50Hz
Cell Constant	:	0.5 to 1.5
Compensation		

Accessories

1) Conductivity Cell 2) Instruction Manual

ZES- 320

ZES-320 PORTABLE KIT FOR SOIL/WATER

Specification

1. PH
2) ORP (Oxidation Redox Potential)
3) DO
4) CONDUCTIVITY
5) TDS
6) SAILINITY
7) TEMP

ZES-321 DIGITAL COLONY COUNTER

ZES-322 DIGITAL SPECTRO PHOTOMETER

ZES-323 FLAME PHOTOMETER

ZES-324 DIGITAL PHOTO ELECTRIC COLORIMETER

ZES-325 DIGITAL TELE THERMOMETER

Specifications

Range	:	35^0C-45^0C.
Resolution	:	0.1^0C
Accuracy	:	0.5^0C.
Input	:	230V AC ± 10%
Readout	:	3½ digit LED display
Channel	:	6

ZES- 321

ZES-324 DIGITAL TDS METER

Range	:	0.20000mpp.
Resolution	:	10mg/Ltr.
Accuracy	:	± 1%Fsd.

ZES-325 DIGITAL POTENTIOMETER

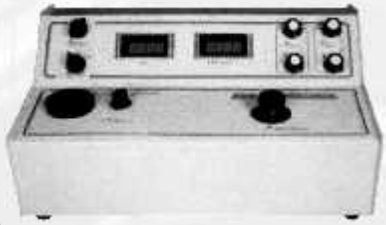
Specification

Input	:	220Volts 50c/s
Measuring Ranges	:	.2volts to 1.8volts
Multiplier	:	0-200m Volts
Standard Cell	:	Built in Output 1.018volts
Range Switch	:	(a) STD Cell (b) EMF Input (c) EMF Output

(a) STD Cell : On this position you can get standard cell output which is shown on Digital Panel Meter

(b) EMF Input: By Keeping this switch at this position, you can measure the voltage up to 1.999 volts.

(c) EMF Output: Here you can get standard voltage .2 volts to 1.8 volts &
0-200mV added on each range.



ZES- 322

ZES-326 LOGIC PROBE

"ZESCO" probe provides visual indication of the logic state of any point in circuit using digital Ics. Capable of detecting pulses as short as 50 nano seconds, it is an invaluable tool for trouble-shooting and prototype development.

Supply Voltage	:	5Votls DC $\pm$ 5%
Input Voltage (High Input)	:	> 2.4votls
Input Voltage(Low Input)	:	<.8volts
Indication-Steady Positive	:	Lamp on
Indication-Steady Ground	:	Lamp off
Indication-Fast Positive pulse	:	Lamp flashes on
Indication-Fast negative pulse	:	Lamp glows less brightly.
Minimum detectable pulse width	:	.50 nano seconds
Extended Indication of lamp	:	100 Milli Seconds

ZES- 323

ZES-327 TRANSISTOR BUILT IN TESTER

Keeping in view the problem faced by the user, we have designed a simple and accurate transistor tester. You can test the built in circuit transistor NPN as well as PNP.

Specification

Input	:	230volts AC
Output	:	On two LED which blink always. The Oscillator voltages are fed to the LED's.
Indication	:	Visual

Complete with instruction manual.

ZES- 339

TEACHING AIDS IN ELECTRONICS
SECTION L

ZES-339 TO STUDY OF RC Circuit (Differentiating & Integrating)

ZES-340 STUDY OF OP-AMP With 7 Experiments. Inverting, Non-Inverting, summing, Differential, Differentiating, Integrating, Voltage Follower.

ZES- 346

ZES-341 TO STUDY THE DIFFERENTIATING CIRCUIT using OP-AMP

ZES-342 TO STUDY INTEGRATING CIRCUIT using OP-AMP

ZES-343 TO STUDY THE CLAMPING CIRCUIT

ZES-344 TO STUDY THE CLIPPING CIRCUITS

ZES-345 CHARGING & DISCHARGING OF A CONDENSER

ZES- 347

ZES-346 LCR IMPEDANCE CIRCUIT WITH BUILT IN STEP DOWN TXFR

ZES-347 LCR RESONANCE APPARATUS (SERIES & PARALLEL) WITHOUT OSCILLATOR.
(b) --do--- With built in Oscillator

ZES-348 FREQUENCY OF AC MAINS BY SONOMETER WITH ELECTROMAGNET &TRANSFORMER
(b) --do— Without Sonometer

ZES-349 ELECTRIC VIBRATOR

ZES-350 STUDY OF OHM'S LAW APPARATUS

ZES-351 TO STUDY FILTER CIRCUITS USING L.C.R.

ZES- 356

ZES-352 FLASHING & QUENCHING APP. COMPLETE WITH P.S. & METER

ZES-353 STUDY OF HALF / FULL WAVE / BRIDGE RECTIFIER WITH & WITHOUT FILTERS

ZES-354 STUDY OF HALF & FULL AVE RECTIFIER WITH AND WITHOUT FILTERS.

ZES-355 STUDY OF VOLTAGE DOUBLER & TRIPLLER CIRCUITS.

ZES-356 CONVERSION OF GALVO INTO A VOLTMETER WITH 2 METER.

ZES-357 CONVERSION OF GALVO INTO A AMMETER WITH 2 METER.

ZES-358 STUDY OF ACTIVE FILTERS

a) Low Pass T & π Type
b) High Pass T & π Type
c) Band Pass T & π Type
d) Band Stop T & π Type
e) M-derived T & π Type

ZES-359 STUDY OF PASSIVE FILTERS

a) Low Pass T & π Type
b) High Pass T & π Type
c) Band Pass T & π Type
d) Band Stop T & π Type
e) M-derived T & π Type

ZES- 357

STUDY OF NETWORK THEOREM

ZES-366 VERIFICATION OF KIRCHOFF'S LAW (KVL & KCL)

ZES-367 VERIFICATION OF SUPER POSITION THEOREM

ZES-368 VERIFICATION OF THEVENIN THEOREM

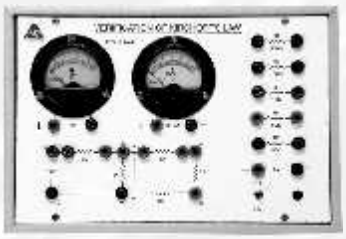
ZES-369 VERIFICATION OF MAXIMUM POWER TRANSFER THEOREM

ZES-370 VERIFICATION OF NORTON'S THEOREM

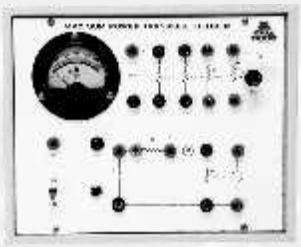
ZES-371 VERIFICATION OF NETWORK THEOREM

ZES-372 RECIPROCITY THEOREM

ZES-373 MILMAN'S THEOREM



ZES- 366



ZES- 369

TTL INTEGRATED CIRCUIT FOR LEARNING COMPUTERS PRINCIPLE

SECTION M

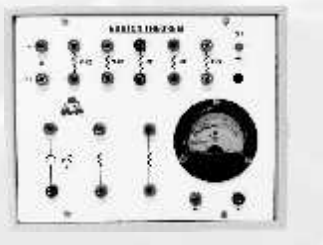
The complete circuit is Engraved on the Front Panel. . Truth tables are provided in the instruction manual complete with power supply of is own. Sockets are provided so that students can make connection them self and verify the Truth Table.

ZES-381 TO STUDY THE CHARACTERISTIC & OPERATION OF TTL INVERTERS

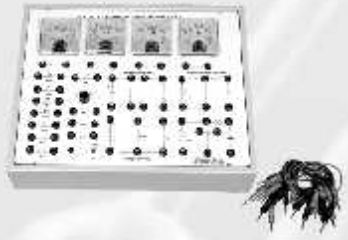
ZES-382 TO STUDY THE CHARACTERISTIC & OPERATION OF A TTL NAND GATE

ZES-383 TO STUDY THE CHARACTERISTICS & OPERATION OF A TTL AND GATE

ZES-384 TO STUDY THE CHARACTERISTIC & OPERATION OF A TTL NOR GATE



ZES- 370



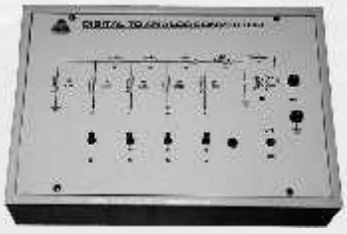
ZES- 371

ZES- 397

ZES- 398

ZES- 402

ZES- 405



ZES- 406

ZES-385 TO CONSTRUCT AN EXCLUSIVE OR GATE AND STUDY ITS OPERATION

ZES-386 TO STUDY THE OPERATION AND CHARACTERISTIC OF A 'D' TYPE FLIP-FLOP

ZES-387 TO STUDY RS, D AND JK FLIP-FLOP

ZES-388 STUDY OF HALF/ FULL SUBSTRACTER

ZES-389 4 BIT RIPPLE COUNTER

ZES-390 4 BIT REVERSE COUNTER

ZES-391 PROGRAMME COUNTER

ZES-392 BCD COUNTER

ZES-393 TO STUDY THE OPERATION AND CHARACTERISTIC OF A SHIFT REGISTER

ZES-394 PROGRAMME SHIFT REGISTER

ZES-395 LEFT & RIGHT SHIFT REGISTER

ZES-396 B C D TO DECIMAL DECODER

ZES-397 16- 1 LINE MULTIPLEXER

ZES-398 1 LINE TO 16 LINE DEMULTIPLEXER

ZES-399 VERIFICATION OF DEMORGANS THEOREM

ZES-400 VERIFICATION OF ARITHMETIC LOGIC UNIT (ALU)

ZES-401 VERIFICATION OF 4 BIT ADDER AND SUBTRACTOR

ZES-402 ENCODING AND DECODING BOARD

ZES-403 LOGIC TRAINING BOARD
Counters and Shift Register

ZES-404 BCD TO 7 SEGMENT DECODER

ZES-405 ANALOG TO DIGITAL CONVERTOR

ZES-406 DIGITAL TO ANALOG CONVERTOR

ZES-407 RAM 16 WORDS OF 4 BIT BOARD

ZES-408 CLOCK OSCILLATOR

ZES-409 DECIMAL TO BINARY ENCODER

ZES-410 4 BIT BINARY UP-DOWN COUNTER

ZES-411 TRISTATE BUFFER

ZES-412 MODULO-N-COUNTER

ZES-413 READ ONLY MEMORY (ROM)

ZES-414 MASTER SLAVE J.K. FLIP FLOP

ZES-415 RING COUNTER & JOHNSON COUNTER

ZES-416 STUDY OF HALF ADDER & FULL ADDER

ZES-417 STUDY OF PARITY CIRCUITS

ZES-418 STUDY OF 7 SEGMENT DISPLAY

ZES-419 SAMPLE & HOLD CIRCUITS

ZES-420 BASIC LOGIC GATE USING DIODE OR, AND GATE

ZES-421 BASIC LOGIC GATE USING TRANSISTOR OR, AND, NOT

ZES-422 BASIC LOGIC GATE USING TRANSISTOR NAND, AND, NOR

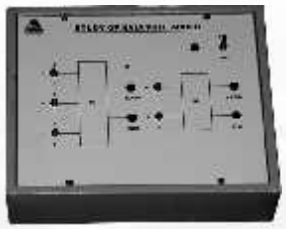
ZES-423 DIGITAL TRAINER

AND GATE NAND GATE NOT GATE EX-NOR GATE
OR GATE EX-OR GATE NOR GATE RS FLIP/FLOP
Realization : Boolean Expression Half Adder.

ZES-424 BASIC LOGIC GATE AND, NAND, OR, NOR, NOT

ZES-425 LOGIC TRAINER WITH 5 CARDS

ZES-426 SYNCHRONOUS COUNTER



ZES- 416

ZES- 424

ZES- 426

ZES- 439

MOVING COIL METERS

ZES-435 VOLTMETER DC DIA 65MM WITH STAND

ZES-436 AMMETER DC DIA 65MM WITH STAND

ZES-437 GALVANOMETER DC DIA 65MM WITH STAND

ZES-438 DELUXE VOLTMETER/ AMMETER/ GALVANOMETER DC DIA 110MM (ANY ONE)

ZES-439 VOLTMETER / AMMETER/ GALVANOMETER DC DIA 72 MM (ANY ONE)

ELECTROMAGNET POWER SUPPLIES
SECTION N

ZES-448 MODEL EMP- 20

SPECIFICATION

OUTPUT VOLTAGE	:	0-100Volts DC
OUTPUT CURRENT	:	0-10 Amps-Maximum
INDICATOR	:	Amperemeter is provided

MODEL EMP- 10
SPECIFICATION

OUTPUT VOLTGE	:	0-50Volts DC
OUTPUT CURRENT	:	0-5Amps-Maximum
INDICATOR	:	Amperemeter is provided

ELECTROMAGNET

SECTION N

ZES- 449

ZES-449 MODEL EMP - 10

SPECIFICATION

FIELD STRENGTH	:	Upto 10,000 Gauss at 10mm. Gap
POLE PIECES	:	Dia 5.5 cms. Length 20cms.
COILS	:	Dia 20cms
RESISTANCE OF THE COIL	:	12-14 ohms per coil

ZES- 460

MODEL EMP - 5

SPECIFICATION

FIELD STRENGTH	:	Up to 7500 Gauss at 10mm
POLE PIECES	:	Dia 5cms. Length 15cms
COILS	:	Dia 20cms
RESISTANCE OF THE COIL	:	10 Ohms per coil.

ELECTRONIC COMMUNICATIONS (IC BASED)

SECTION O

Complete circuit diagram is engraved on the front panel. With built in power supply and instruction manual.

ZES- 471

ZES-460 AMPLITUDE MODULATION AND DEMODULATION

ZES-461 FREQUENCY MODULATION AND DEMODULATION

ZES-462 PHASE MODULATION

ZES-463 BALANCED MODULATOR (DOUBLE SIDE & SINGLE SIDE BAND)

ZES-464 PULSE AMPLITUDE MODULATION AND DEMODULATION

ZES-465 PULSE POSITION MODULATION AND PULSE WIDTH MODULATION

ZES- 472

ZES-466 PULSE POSITION & PULSE WIDTH DEMODULATION

ZES-467 TIME DIVISION MULTIPLEXER

ZES-468 FREQUENCY-SHFT-KEYING TRANSMITTER

ZES-469 FREQUENCY-SHIFT-KEYING RECEIVER

ZES-470 PULSE CODE MODULATION & DEMODULATION

ZES-471 LASER DIODE EXPERIMENT COMPLETE SET UP

ZES-472 HE- NE LASER EXPERIMENT COMPLETE SET UP

ZES-473 DELTA MODULATION & DEMODULATION

ZES-474 ANALOG SAMPLING & RECONSTRUCTION

ZES-475 PAM/ PWM/ PPM MOD/ DEMOD KIT

ZES-476 TDM PULSE CODE MODULATION KIT

ZES-477 TDM PULSE CODE DEMODULATION KIT

ZES-478 DELTA/ ADAPTIVE MOD/ DEMOD KIT

ZES-479 DATA CONDITIONING KIT

ZES-480 DATA RECONDITIONING KIT

ZES-481 PCM RECEIVER

ZES-482 PCM TRANSMITTER

UNIVERSAL PROGRAMMER & IC TESTER

ZES-510 48 Pin USB Based Universal Programmer

ZES-511 40 Pin Parallel Port Universal Programmer

ZES-512 Digital IC Tester

ZES-513 Universal IC Tester

INSTRUMENTATION LAB

ZES-514 LATTICE DYNAMIC KIT (MONOATOMIC & DIATOMIC)

ZES-515 TRANSMISSION LINE TRAINER

ZES-516 DISPLACEMENT MEASUREMENT USING LVDT TRAINER

ZES-517 PRESSURE MEASUREMENT KIT

ZES-518 TEMPERATURE MEASUREMENT USING RTD (PT-100)

ZES-519 LOAD MEASUREMENT USING STRAIN GAUGE

ZES-520 TEMPERATURE MEASUREMENT USING THERMOCOUPLE KIT

ZES-521 LEVEL INDICATOR K IT

ZES-522 SPEED MEASUREMENT KIT

ZES-523 FLOW MEASUREMENT KIT

ZES-524 ANGULAR DISPLACEMENT KIT

ZES- 481

ZES- 482

ZES- 517

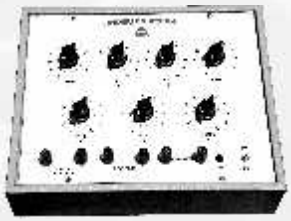
ZES- 518

ZES- 519

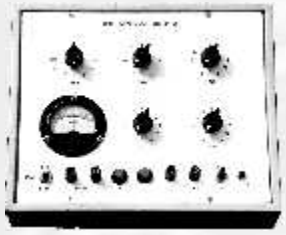
BRIDGES

SECTION P

ZES- 550



ZES- 551.1

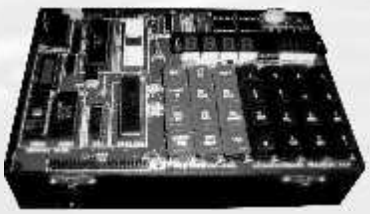


ZES- 552

ZES-550	DESAUTY'S BRIDGE
ZES-551	ANDERSON'S BRIDGE WITHOUT OSCILLATOR
ZES-551.1	ANDERSON'S BRIDGE WITH OSCILLATOR & HEAD PHONE
ZES-552	WHEATSONE BRIDGE
ZES-553	SCHERING BRIDGE
ZES-554	WIEN BRIDGE
ZES-555	STUDENT KELVIN BRIDGE
ZES-556	KELVIN DOUBLE BRIDGE (INDUSTRIAL)
ZES-557	KOHLRAUSCH CONDUCTIVITY BRIDGE
ZES-558	RAYLEIGH'S BRIDGE
ZES-559	OWEN'S BRIDGE
ZES-560	MAXWELL'S BRIDGE
ZES-561	CALLENDER & GRIFFITH'S BRIDGE
ZES-562	CAREY FOSTER'S BRIDGE
ZES-563	HAY'S BRIDGE

MICROPROCESSOR KIT

SECTION Q

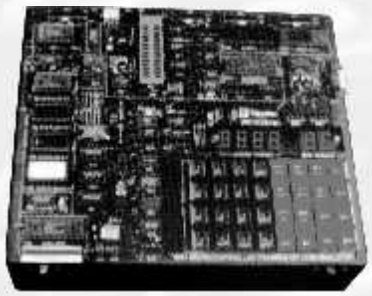


ZES-8502-1 8-BIT MICROPROCESSOR TRAINING KIT

- Based on 8085 CPU at 6.144MHz Crystal
- Total on board memory expansion upto 64KB
- 4K bytes of EPROM loaded with monitor.
- 2k byte of RAM with provision for further expansion 6116/6264.
- Six seven segment Hexadecimal display
- 24 I/0 lines with provision for expansion upto 48 I/O lines.
- 16 bit programmable time/counter using 8253
- On board RS 232C interface for CRT using SID/SOD lines
- 28 Computer graded keys 16 for Hexadecimal keys and 10 for programming editing, debugging, execution etc.
- PC UP/DOWN loading facility.
- PTH, PCB with green marking
- Housed in an attracted wooden cabinet
- Built in Power Supply.

ZES-31/51 **8031 MICRCONTROLLER TRAINING KIT**

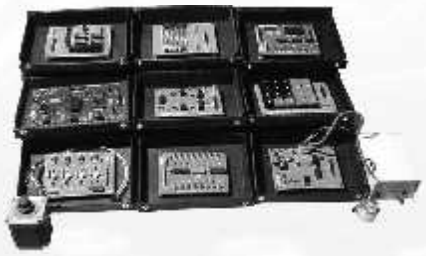
- Based on 8031/8051/8751 operating at 10/12MHz.
- Onboard 8k RAM.
- Battery backup for RAM area.
- 8/16K bytes of EPROM with powerful monitor program.
- Total memory expandable upto 128k Bytes using four 28 pin sockets.
- 48 I/O lines using 2 nos. of 8255.
- Two external interrupts INTO & INT1.
- 28 keys Hexadecimal keyboard and six Seven Segment displays.
- RS-232C interface using 8251
- Auxiliary RS-232C using serial pins of 80C31.
- All data address and control signals (TTL compatible) available at FRC connector.
- Powerful software commands like INSERT, DELETE, BLOCK MOVE, SET/CLEAR BREAK POINT, SINGLE STEP, EXAMINE THROUGH REGISTER, EXECUTE, EXAMINE, MODIFY, PROGRAM/DATA/INTERNAL MEMORY etc.
- Uploading/Downloading facility from PC in Intel Hex format.
- Inbuilt power supply
- User's Manual, Cables & Connectors.



ZES-31/51 LCD **8051 MICROCONTROLLER TRAINING KIT WITH LCD LCD DISPLAY**

- Based on 8051/89C52 micro controller
- Onboard 32k RAM.
- Battery backup for RAM area
- 64 K bytes of EPROM with powerful monitor program
- 48 I/O lines using 2 Nos. of 8255.
- 3 Channel programmable timer/counter using 8253.
- Two external interrupts INTO & INT1 from CPU
- IBM PC compatible keyboard for entering the program, editing and executing the programs.
- 20 x 2 LCD (Liquid Crystal Display) is provided for display.
- RS-232C interface using 8251.
- One serial USART interface provided by 89C51/89C52
- All data address and control signals (TTL compatible) available at FRC connector.
- Powerful software commands like INSERT, DELETE, BLOCK MOVE, SET/CLEAR BREAK POINT, SINGLE STEP, EXAMINE REGISTER, EXECUTE, EXAMINE/MODIFY MEMORY etc.
- Inbuilt power supply.

Detailed User's Manual with sample programs



ZES-6804 **INTERFACING MODULES CAN BE CONNECTED WITH ANY MICROPROCESSOR TRAINING CUM DEVELOPMENT KIT**

(a) ADC Analog to Digital Converter with temp scanner interface
(b) ADS Analog to Digital Converter using ADC 0809
(c) DAC 12 bit A/D & D/A converter using MAX 162
(d) DAC Dual Channel digital to analog converter interface.
(e) LNS Ladder Network Simulator
(f) ICT I.C. Tester
(g) ES Elevator Simulator
(h) KY Keyboard Interface
(i) DI Display Interface
(j) LCD 16x1 LCD Display Interface.
(k) SMC Stepper Motor Controller Interface
(l) Stepper Motor (Torque 10Kg/Cm)
(m) Stepper Motor (Torque 6Kg/Cm)
(n) Stepper Motor (Torque 3Kg/Cm)
(o) Drive for Stepper Motor
(p) Power Supply for Stepper Motor (12V/5Amp)
(q) 26 Pin flat Core Cable to connect the modules & kits.

ZES- EME **ELECTRO MECHEMICAL ENERGY CONVERSION LAB**

1 Ratio & polarity of a single phase transformer
2 Open & short circuit tests on a single phase transformer
3 Sumpner's back to test on single phase transformer
4 Parallel operation of two single phase transformer
5 Construction DC machine
6 To plot of O.C.C of a DC shunt generator and find its critical Resistance
7 Direct load test of DC motor
8 Speed control of a DC motor by armature control and field control methods
9 Open circuit and block rotor test of an Induction motor
10 Star delta starting of a three phase Induction motor
11 Plot O.C.C of a Synchronous generator
12 Plot V-curve of a Synchronous motor

ZES-EML **ELECTRICAL MACHINE LAB**

1 Convert three phase t 2-phase by Scott-connection
2 Load test of DC shunt generator
3 Speed control of a DC motor
4 Swinburne's test of DC shunt motor
5 Hopkinson's test of DC shunt M/Cs
6 Ward Leonard method of speed control

ZES-EL **ELECTRICAL LAB**

1 Single line diagram of a power system and a distortion sub-station and basic functional study of main components used in power system.
2 Make house wiring including earthing for 1-phase energy meter,

	MCB, ceiling fan, tube light, three pin socket and a lamp operated from two different positions. Basic functional study of components used in house wiring
3	Study of construction and basic working of ceiling fan, single phase induction motor and three phase squirrel cage induction motor.Connect ceiling fan along with regulator and single phase induction motor through auto- transformer to run and vary speed
4	Basic functional study and connection of moving coil & moving iron ammeters and voltmeter dynamometer, wattmeter and energy mete.
5	Run 3-phase squirrel cage induction motor at no load and measure its voltage, current power and power factor. Reverse the direction of rotation.
6	Study of construction and connection of single phase transformer and auto transformer. Measure input and output voltage and fin turn ratio.
	Study of construction of a core type three phase transformer. Perform star and delta connection on a 3-phase transformer and find relation between line and phase voltage.
7	Display board of Resistor, Diode, Transistor, Semiconductor ICs capacitors

ZES-AML	**APPLIED MECHANICAL LAB**
1	Universal Force table
2	Parallelogram of force apparatus
3	Polygon of forces apparatus
4	Bell Cranck lever
5	Compound lever
6	Simply supported beam for span
7	Overhang beam type
8	Friction slide apparatus
9	Differential wheel and axle
10	Worm and worm wheel
11	Screw jack
12	Winch crab single purchase
13	Winch crab double purchase
14	Moment of Inertia of Flywheel
15	Atwood machine
16	Simple jib crane
17	First system of pulley
18	Second system of pulley
19	Slotted weight
20	Weight box
21	Stop watch digital

NOTES

LOGIC GATES

TRANSISTOR CHAR.

NETWORK THEOREM

B. H. CURVE

MILLIKAN'S OIL DROP

VACUUM TUBE VOLTMETER

STEFAN'S CONSTANT APP.

REGULATED POWER SUPPLY

ZENER DIODE

PUSH PULL AMPLIFIER

e/M BY THOMPSON METHOD

e/M BY MAGNETRON VALVE

DECADE CONDENSER

DEMONSTRATION TXFR

SODIUM LAMP TXFR

VOLTMETER

OHM'S LAW

THERMISTOR CHARAC. APPA.

- MICROPROCESSOR LAB
- ANALOG COMMUNICATION LAB
- BASIC ELECTRONIC LAB
- DIGITAL CIRCUIT LAB
- MEASUREMENT LAB
- POWER ELECTRONIC LAB
- DIGITAL COMMUNICATION LAB
- COMPUTER APPLICATION LAB
- PROJECT LAB
- VLSI/VHDL LAB
- MICROCONTROLLER LAB
- DIGITAL & ANALOG LAB
- ANALOG CIRCUIT LAB
- INSTRUMENTATION LAB
- MECHATRONICS LAB
- CONTROL SYSTEM LAB
- NETWORK LAB
- PCB DESIGNING LAB
- EMBEDDED SYSTEM LAB
- CONSUMER ELECTRONIC LAB

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